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Four males of *Agrias beatifica* (Lepidoptera, Nymphalidae) with very small ocelli without a pupil

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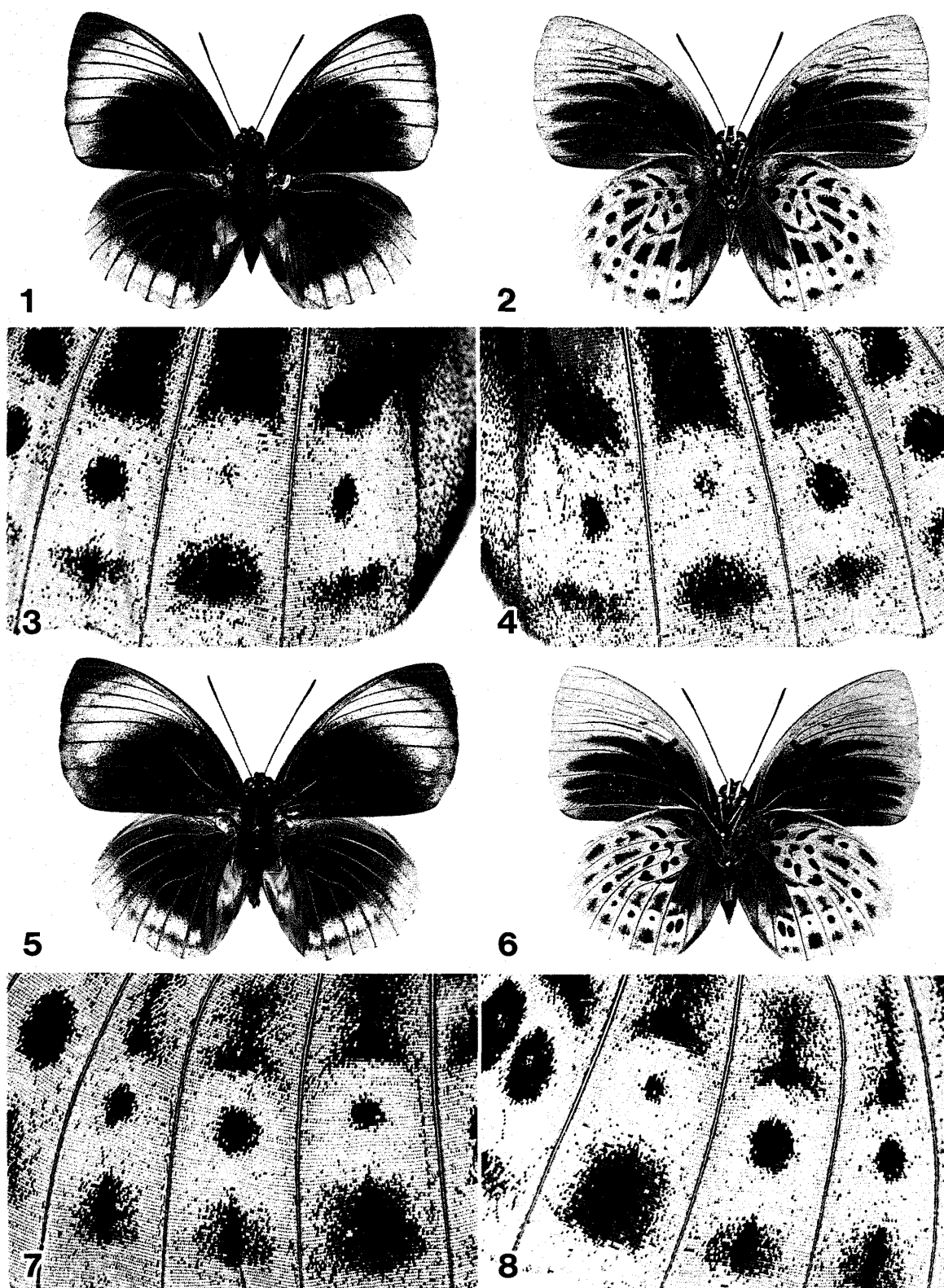
Abstract Four males of *Agrias beatifica* Hewitson were presented with very small ocelli containing no pupil.

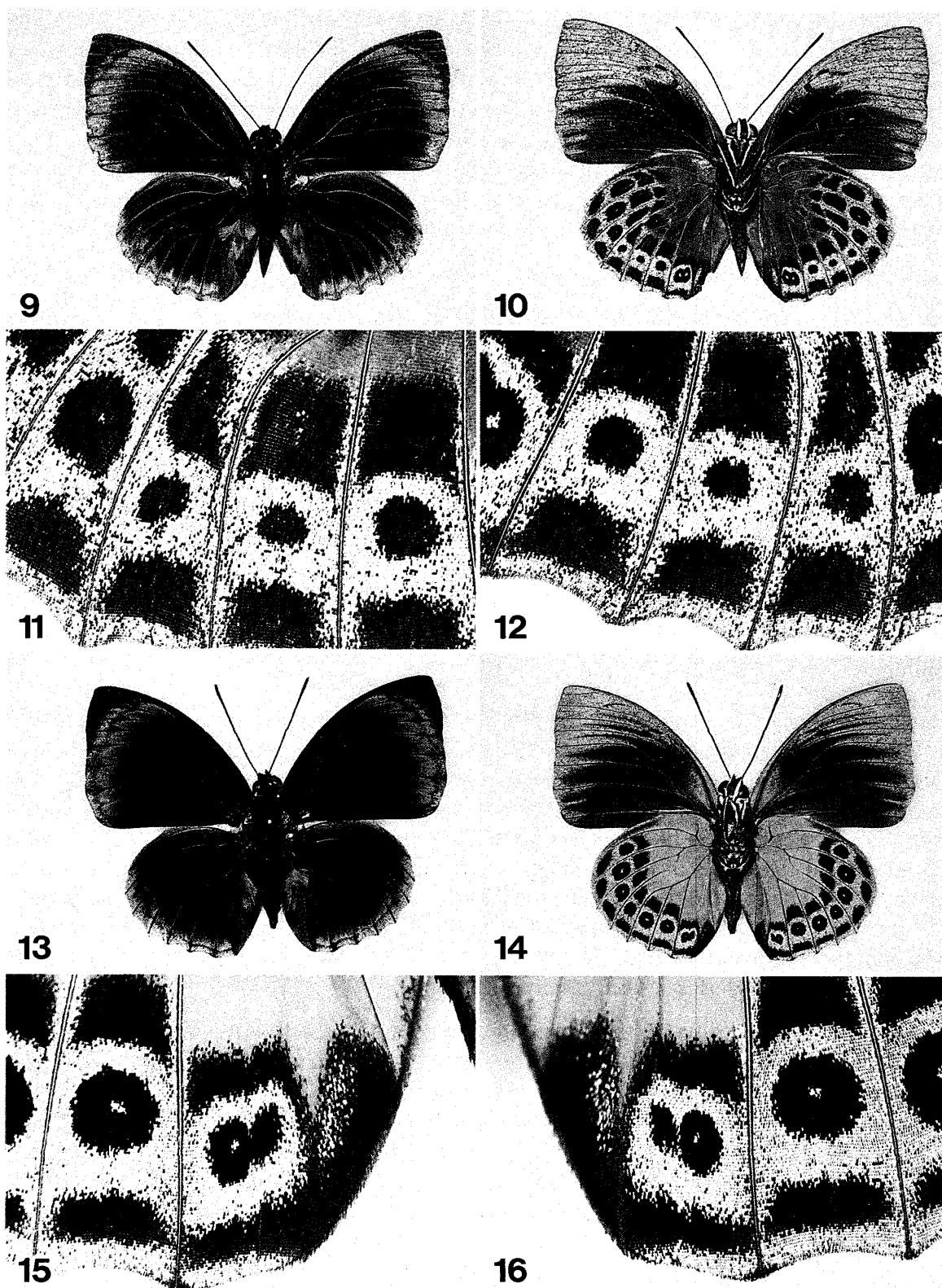
Key words *Agrias beatifica beata* Staudinger, *Agrias beatifica beatifica* Hewitson, *Agrias beatifica stuarti* Godman & Salvin, new variation, *parvulaocelli* var. nov., Nymphalidae.

Agrias beatifica Hewitson shows round black spots as the second outer row on the hindwing ventral surface. A small white or blue spot is seen in each black spot on discs 2 to 7, and two white or blue spots are seen in a black spot on disc 1b. The black spot is imagined as a small eye or an ocellus, and the white spot as a pupil (Rebillard, 1961; Barselou, 1983). Sizes of the 7 ocelli are almost the same in each butterfly, while the ocellus sizes are different among the subspecies. More than 500 specimens of *A. beatifica* were collected by the author in Peru, and four males were found to have very small ocelli without a pupil.

Fig. 1 shows the first specimen in dorsal view with an oval basal blue patch and a wide golden-green band on the forewing (38 mm forewing length). Fig. 2 shows the specimen in ventral view with very small ocelli in discs 1b and 2. Small basal red shows that this specimen belongs to *A. beatifica beata*. Two separated ocelli are often observed in disc 1b of *A. beatifica beata*. However, this specimen has only one ocellus without a pupil in disc 1b. The disc 2 ocellus is the smallest among the 7 ocelli. A few white scales are seen in left disc 2 ocellus. Fig. 3 shows a magnified picture of the right hindwing. Black lines are crossing without forming a round ocellus in disc 2. White scales are only seen at the left lower border of disc 1b ocellus. Fig. 4 shows a magnified picture of the left hindwing. Disc 2 black is not presented as a round ocellus, but just like a white-back beetle. White scales are only seen at the border of disc 1b ocellus. This male was captured at Shanki near Satipo, Peru, on July 15, 1996.

Fig. 5 shows the second specimen in dorsal view with a typical pattern of *A. beatifica beata* (41 mm forewing length). Fig. 6 shows the specimen in ventral view with very small ocelli containing no pupil in discs 2, 4 and 6. The small extent of basal red shows that this specimen belongs to *A. beatifica beata*. The disc 2 ocellus is the smallest among the 7 ocelli. Two separated ocelli are seen in disc 1b, and each ocellus contains a blue pupil. Fig. 7 shows a magnified picture of the right hindwing. White scales are only seen at the border of black ocelli in discs 2, 3 and 4. Three blue scales are seen in disc 5 ocellus. Fig. 8 shows a magnified picture of the left hindwing. White scales are seen at the lower part of disc 2 ocellus. White scales are only seen at the border of black ocelli in discs 3 and 4. Three white scales are seen in a blue pupil on inner 1b ocellus. This specimen was captured at the Rio Colorado, Chanchamayo, Peru, on August 5, 1996.

Fig. 9 shows the third specimen in dorsal view with wide green bands and extended discal blue (42 mm forewing length). Fig. 10 shows the specimen in ventral view with very small

Figs 1–4. A male of *Agrias beatifica beata*, var. *parvulaocelli* nov. with very small ocelli in hindwing discs 1b and 2 (Shanki, Peru). 1. Dorsal view. 2. Ventral view. 3. Enlargement of right hindwing. 4. Enlargement of left hindwing.

Figs 5–8. A male of *Agrias beatifica beata*, var. *parvulaocelli* nov. with very small ocelli in hindwing discs 2, 4 and 6 (Chanchamayo, Peru). 5. Dorsal view. 6. Ventral view. 7. Enlargement of right hindwing. 8. Enlargement of left hindwing.

Figs 9–12. A male of *Agrias beatifica beatifica* var. *parvulaocelli* nov. with very small ocelli in hindwing discs 2 to 4. (Pebas, Peru). 9. Dorsal view. 10. Ventral view. 11. Enlargement of right hindwing. 12. Enlargement of left hindwing.

Figs 13–16. A male of *Agrias beatifica stuarti* var. *parvulaocelli* nov. with a very small ocellus in hindwing disc 1b (Iquitos, Peru). 13. Dorsal view. 14. Ventral view. 15. Enlargement of right hindwing. 16. Enlargement of left hindwing.

ocelli without a pupil in discs 2, 3 and 4. A large basal carmine red and cell black ghosts show that this specimen belongs to *A. beatifica beatifica* Hewitson. Diameters of the ocelli in disc 2 to 4 are half as small as those in the other discs. Fig. 11 shows a magnified picture of the right hindwing. A few blue scales are forming a small blue pupil at the center of disc 2 ocellus. White scales are only seen at the border of black ocelli in discs 3 and 4. Fig. 12 shows a magnified picture of the left hindwing. No white or blue scale is seen in the ocelli on discs 2 and 3, while one white and one blue scales are seen at the center of disc 4 ocellus. This specimen was captured at the Rio Ampiyacu, Pebas, Peru, on February 4, 1994.

Fig. 13 shows the fourth specimen in dorsal view with a wide green band, discal black, and basal oval blue on the forewing (41 mm forewing length). Fig. 14 shows this specimen in ventral view with a small ocellus in disc 1b. The large area of basal yellow without a black ghost in the cell shows that this specimen belongs to *A. beatifica stuarti* Godman & Salvin. Normal *A. beatifica stuarti* has double pupils in a single ocellus on disc 1b, while this specimen has only one pupil in disc 1b ocellus. The ocellus diameter in disc 1b is one-third smaller than those in the other discs. Fig. 15 shows a magnified picture of the right hindwing. The 1b ocellus has a narrow part at the center, and a dark blue scale is seen at the center of the inner part. Fig. 16 shows a magnified picture of the left hindwing. The 1b ocellus is almost separated into two independent ocelli. A dark-blue scale is seen at the bottom of the inner 1b ocellus. No white or blue scale is seen at the center of the inner 1b ocellus. This specimen was captured at the Rio Itaya, Iquitos, Peru, on August 21, 1985.

Comment

More than 500 *Agrias beatifica* butterflies were collected by the author in Peru. Color photographs were made for studies in 475 butterflies. Two separated ocelli in disc 1b were found in 74 out of 137 *A. beatifica beata* (54%), in 14 out of 36 *A. beatifica staudingeri* Michael (39%), in 7 out of 195 *A. beatifica beatifica* (4%), and in 4 out of 107 *A. beatifica stuarti* (4%). Percentages of butterflies having no pupil in disc 1b were 8%, 6%, 0%, and 0%, respectively. Percentages of insects having a single pupil in disc 1b were 6%, 8%, 0%, and 1%, respectively. The fourth specimen is the only one having a single pupil in disc 1b among the 302 butterflies of *A. beatifica beatifica* or *A. beatifica stuarti*. The ocellus formations seem to be similar between *A. beatifica beata* and *A. beatifica staudingeri*, as well as between *A. beatifica beatifica* and *A. beatifica stuarti*.

Sizes of the 7 ocelli in discs 1b to 7 were almost the same in each of the 471 butterflies except the four presented in this paper. All 4 butterflies in this paper have different-sized ocelli. The two *A. beatifica beata* have the smallest ocellus in disc 2. The *A. beatifica beatifica* has three small ocelli in discs 2 to 4. The *A. beatifica stuarti* has a small ocellus in disc 1b. These 4 butterflies have no pupil in the smaller ocelli on the magnified pictures. Ocelli without visible pupils usually contain dark-blue pupils in magnified pictures as shown in right hindwing disc 2 on the third specimen. The author named these rare butterflies as *parvulaocelli* var. nov.

References

Barselou, P. E., 1983. *The Genus Agrias. A taxonomic and illustrated Guide.* 96 pp., 15 pls. Sciences Nat. Compiègne.

Rebillard, P., 1961. Révision systématique des Lépidoptères Nymphalides du genre *Agrias. Mém. Mus. natn. Hist. nat. Paris* (A) **22**: 157–254.

摘　　要

眼状紋が極めて小さい4頭の雄ベアティフィカアグリアス (鱗翅目，タテハチョウ科) (井上武夫)

ベアティフィカアグリアスの後翅裏面には黒色斑が列をなし，外縁から第2列目の黒色斑は円形で内部に白色または青色の小斑点をともない，眼とひとみに例えられている．第2室から7室までの眼状紋には1個，1b室の眼状紋には2個の白色斑点が通常認められる．眼状紋の大きさは各個体では7個がほぼ同じであるが，亜種間では異なり，ベアータ亜種とスタウディンゲリ亜種は小さく，ベアティフィカ亜種とストゥアルティ亜種では大きい．白や青の小斑点をもたない極めて小さな眼状紋をペルー産4頭の雄に認めたので報告する．

写真1-4は1996年7月15日にサティポ近郊のシャンキで採集された雄で，後翅赤色斑は基部に限られ，典型的なベアータ亜種である．7個の眼状紋はかなり小さいが，1b室と2室の眼状紋は特に小さい．ベアータ亜種では1b室の眼状紋が2個に分離している個体を半数に認めるが，この個体では一個の黒点しか認めない．拡大写真では左右の1b室眼状紋の辺縁に白色鱗粉が認められるが，中心部には認めない．第2室の眼状紋は7個の中では最も小さい．右側の拡大写真では黒線が交差しているだけで，円とは遠くかけはなれた形状をしている．左側のは虫が描かれたようで，円形とは言い難い形状をしている．

写真5-8は1996年8月5日にチャンチャマーヨ (中部ジャングル地帯) コロラド河流域で採集された雄で，後翅赤色斑は基部に限られ，典型的なベアータ亜種である．7個の眼状紋はかなり小さいが，2, 4, 6室の眼状紋は特に小さい．1b室の眼状紋は2個に分離しており各々に青色小斑を認める．第2室の眼状紋は7個の中では最も小さい．右側の拡大写真では2-4室の眼状紋の辺縁に白色鱗粉が認められるが，中心部には白も青も認めない．左側の2室眼状紋には白の小斑が中心近くに認められるが，4室の白色鱗粉は眼状紋の辺縁にのみ見られる．写真9-12は1994年2月4日にペバス近郊アンピヤック河流域で採集された雄で，後翅鮮紅色斑は第4列黒色斑の内側まで拡がり，中室には2個の黒色斑の痕跡が認められ，典型的なベアティフィカ亜種である．2-4室の眼状紋は他と比べ2分の1以下であり，ひとみを認めない．右側の拡大写真ではやや大きい2室の眼状紋中心に，少数の青色鱗粉からなるひとみが認められる．3, 4室の眼状紋の辺縁には白色鱗粉が認められるが，中心部には白も青も認めない．左側では4室眼状紋中心近くに白と青の鱗粉各1個が認められる．2室と3室の眼状紋には白も青も認めない．

写真13-16は1985年8月21日にイキトス近郊イタヤ河流域で採集された雄で，後翅黄色斑は第3列黒色斑の内側まで拡がり，中室には黒色斑の痕跡が認められず，典型的なストゥアルティ亜種である．1b室の眼状紋は他と比べ3分の1以下であり，ひとみを1個しか認めない．右側の拡大写真では1b室の眼状紋は中央部でくびれ，外則部分には青色鱗粉に縁どられた白小斑が認められ，内側部分にも青色鱗粉が1個認められる．左側では1b室眼状紋は中央でほぼ2個の眼状紋に2分され，外側眼状紋には青色鱗粉に縁どられた白小斑が認められる．内側眼状紋は外側の半分以下の大きさしかなく，中心部分には白も青も認めない．しかし，その下部には白の切れ込みがあり，その上に青の鱗粉1個が認められるところから，通常の眼状紋が中心線で上下に2分され，下部が消失したと推測できる．ベアティフィカアグリアスの7個の眼状紋の形状は亜種間ではかなり異なる．著者が所有する137頭のベアータ亜種，36頭のスタウディンゲリ亜種，195頭のベアティフィカ亜種，107頭のストゥアルティ亜種をカラー写真にして比較した．1b室の眼状紋が2個に分離している個体は，各々全体の54%, 39%, 4%, 4%であった．1b室の2個のひとみが全く認められない個体の比率は各々8%, 6%, 0%, 0%であった．1b室のひとみが1個しか認められない個体の割合は各々6%, 8%, 0%, 1%であった．眼状紋の形状は前2亜種間，後2亜種間では類似しており，異常型の出現頻度も似通っていたことから，各々は同一グループに属すと考えられる．後2亜種グループでは肉眼的にひとみを認めない個体は稀であるが，報告した第3と第4の個体以外では，写真を拡大すると眼状紋の中心に青色小斑を認めた．また，このグループで1b室にひとみが1個しかない個体は報告した第4の個体以外になく，極めて稀な変異と考えられる．

7個の眼状紋の大きさが個体内で大きく異なることは極めて稀である．ベアータ亜種，スタウディンゲリ亜種の2亜種では，産地によって眼状紋の大きさは異なるが，ベアティフィカ亜種，ストゥアル

ティ亜種の 2 亜種のものよりかなり小さい．報告した第 1 と第 2 の個体の最小眼状紋の大きさは大差ないが，第 3，第 4 の個体の最小眼状紋に比しかなり小さいのは，亜種グループが異なるためである．報告した 4 頭は，7 個の眼状紋のいくつかが極めて小さく，その中心部に白や青の鱗粉を認めない点で稀な変異体であり，亜種を越えて *parvulaocelli* var. nov. と命名した．

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